303.7 Pit locations. Appliances installed in pits or excavations shall not come in direct contact with the surrounding soil. The sides of the pit or excavation shall be held back a minimum of 12 inches (305 mm) from the appliance. Where the depth exceeds 12 inches (305 mm) below adjoining grade, the walls of the pit or excavation shall be lined with concrete or masonry, such concrete or masonry shall extend a minimum of 4 inches (102 mm) above adjoining grade and shall have sufficient lateral load bearing capacity to resist collapse. The appliance shall be protected from flooding in an approved manner.

SECTION 304 (IFGS)
COMBUSTION, VENTILATION, AND DILUTION AIR

304.1 General. The provisions of Section 304 shall apply to gas utilization equipment installed in buildings that requires air for combustion, ventilation, and dilution of flue gases.

Comm 65.0304 (1) Additional combustion air requirements. The requirements in IMC Sections 705, 706, and 707 shall apply to gas appliances.

Exceptions:

1. Direct-vent equipment that is constructed and installed so that all air for combustion is obtained directly from the outdoors and all flue gases are discharged to the outdoors.
2. Enclosed furnaces that incorporate an integral total enclosure and use only outdoor air for combustion and dilution of flue gases.

304.2 Appliance/equipment location. Equipment shall be located so as not to interfere with proper circulation of combustion, ventilation, and dilution air.

304.3 Outdoor air required. Where normal infiltration does not provide the necessary air, outdoor air shall be introduced in accordance with Section 304.11 or 304.13.

304.4 Process air. In addition to air needed for combustion, process air shall be provided as required for cooling of equipment or material, controlling dew point, heating, drying, oxidation, dilution, safety exhaust, odor control, and air for compressors.

304.5 Ventilation air. In addition to air needed for combustion, air shall be supplied for ventilation, including all air required for comfort and proper working conditions for personnel.

304.6 Draft hood/regulator location. A draft hood or a barometric draft regulator shall be installed in the same room or enclosure as the equipment served so as to prevent any difference in pressure between the hood or regulator and the combustion air supply.

304.7 Makeup air provisions. Air requirements for the operation of exhaust fans, kitchen ventilation systems, clothes dryers, and fireplaces shall be considered in determining the adequacy of a space to provide combustion air requirements.

304.8 Combustion air methods. Air for combustion, ventilation, and dilution of flue gases for gas utilization equipment vented by natural draft shall be obtained by application of one of the methods covered in Sections 304.10 through 304.13.

304.9 Unusually tight construction. Equipment located in buildings of unusually tight construction (see definitions in Section 202) shall be provided with air for combustion, ventilation, and dilution of flue gases using one of the methods described in Section 304.11 or 304.13.

Comm 65.0304 (2) Note: When applying the provisions of this section, refer to s. Comm 65.0202 (1) for the definition for "unusually tight construction."

Comm 65.0304 (3) Spaces without openings to the outside. When the space providing air for combustion, ventilation and dilution of flue gases has a minimum volume of 250 cubic feet per 1,000 Btu per hour combined input rating of all appliances, the use of inside air for combustion shall be allowed.

304.10 All air from inside the building. A confined space shall be provided with two permanent openings communicating directly with other spaces of sufficient volume so that the combined volume of all spaces meets the criteria for an unconfined space. The total input of all equipment installed in the combined spaces shall be used to determine the required minimum volume. Each opening shall have a minimum free area of not less than 1 square inch per 1,000 Btu per hour (2201 mm^2 per kw) of the total input rating of all gas utilization equipment in the confined space, but not less than 100 square inches (64415 mm^2). One opening shall commence within 12 inches (305 mm) of the top, and one opening shall commence within 12 inches (305 mm) of the bottom, of the enclosure (see Figure 304.10). The minimum dimension of air openings shall be not less than 3 inches (76 mm).

304.11 All air from outdoors. The confined space shall communicate with the outdoors in accordance with Section 304.11.1 or 304.11.2. The minimum dimension of air openings shall not be less than 3 inches (76 mm). Where ducts are used, they shall be of the same cross-sectional area as the free area of the openings to which they connect.

304.11.1 Two opening method. Two permanent openings, one commencing within 12 inches (305 mm) of the top, and one commencing within 12 inches (305 mm) of the bottom, of the enclosure shall be provided. The openings shall communicate directly, or by ducts, with the outdoors or spaces that freely communicate with the outdoors.

Where directly communicating with the outdoors, or where communicating with the outdoors through vertical ducts, each opening shall have a minimum free area of 1 square inch per 4,000 Btu per hour (550 mm^2 per kw) of total input rating of all equipment in the enclosure [see Figures 304.11(1) and 304.11(2)].

Where communicating with the outdoors through horizontal ducts, each opening shall have a minimum free area of not less than 1 square inch per 2,000 Btu per hour (1100 mm^2 per kw) of total input rating of all equipment in the enclosure [see Figure 304.11(3)].

304.11.2 One opening method. One permanent opening, commencing within 12 inches (305 mm) of the top of the enclosure, shall be provided. The equipment shall have clearances of at least 1 inch (25 mm) from the sides and back and 6 inches (152 mm) from the front of the appliance. The opening shall directly communicate with the outdoors or through a vertical or horizontal duct to the outdoors or

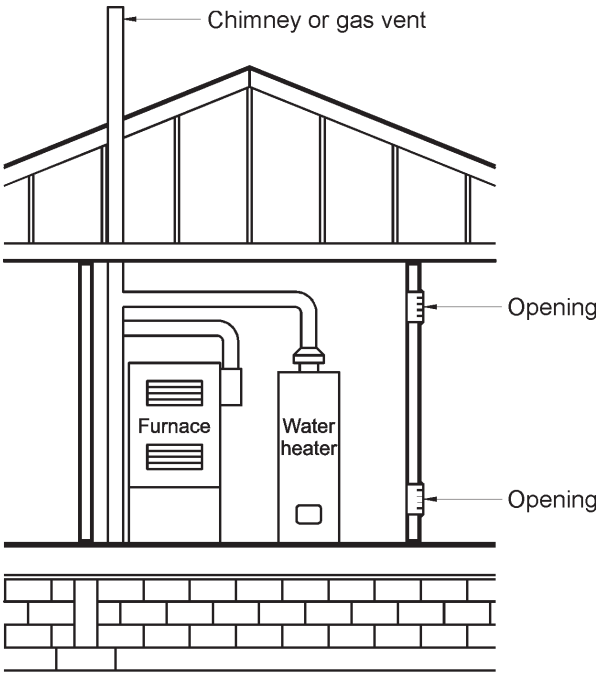


FIGURE 304.10
APPLIANCES LOCATED IN CONFINED SPACES;
ALL AIR FROM INSIDE THE BUILDING (see Section 304.10)

spaces that freely communicate with the outdoors [see Figure 304.11(4)] and shall have a minimum free area of 1 square inch per 3000 Btu per hr (734 mm^2 per kw) of the total input rating of all equipment located in the enclosure, and not less than the sum of the areas of all vent connectors in the confined space.

304.12 Combination of air from inside and outdoors. Where the building in which the fuel-burning appliances are located is not unusually tight construction and the communicating interior spaces containing the fuel-burning appliances comply with all of the requirements of Section 304.10, except the volumetric requirement of Section 304.10, required combustion and dilution air shall be obtained by opening the room to the outdoors utilizing a combination of inside and outdoor air prorated in accordance with Section 304.12.6. Openings connecting the interior spaces shall comply with Section 304.10. The ratio of interior spaces shall comply with Section 304.12.5. The number, location and ratios of openings connecting the space with the outdoor air shall comply with Sections 304.12.1 through 304.12.4.

304.12.1 Number and location of openings. At least two openings shall be provided, one within 1 foot (305 mm) of the ceiling of the room and one within 1 foot (305 mm) of the floor.

304.12.2 Ratio of direct openings. Where direct openings to the outdoors are provided in accordance with Section 304.11.1, the ratio of direct openings shall be the sum of the net free areas of both direct openings to the outdoors, divided by the sum of the required areas for both such openings as determined in accordance with Section 304.11.1.

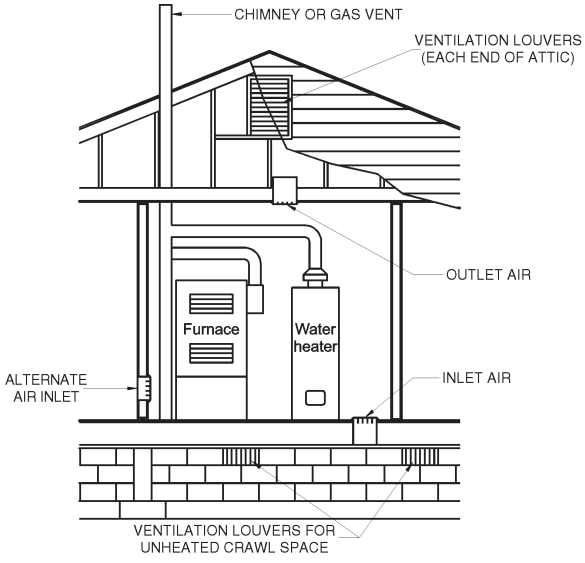
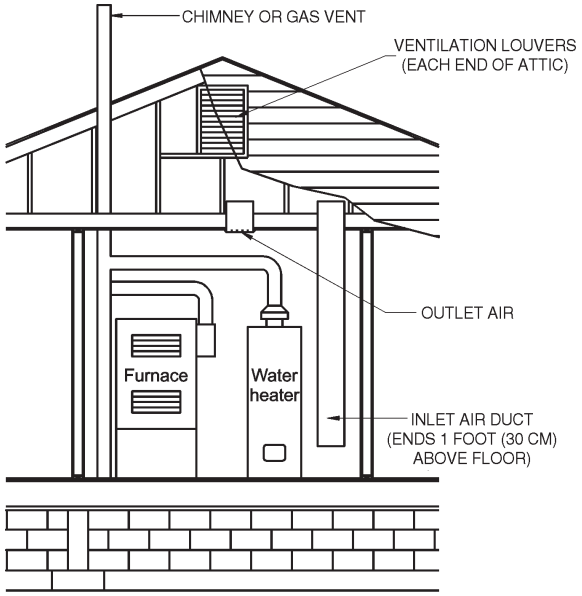


FIGURE 304.11(1)
APPLIANCES LOCATED IN CONFINED SPACES; ALL AIR FROM OUTDOORS—INLET AIR FROM VENTILATED CRAWL SPACE AND OUTLET AIR TO VENTILATED ATTIC (see Section 304.11.1)



For SI: 1 foot = 304.8 mm.

FIGURE 304.11(2)
APPLIANCES LOCATED IN CONFINED SPACES;
ALL AIR FROM OUTDOORS THROUGH VENTILATED ATTIC
(see Section 304.11.1)